Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

WASHINGTON LETTER.

WASHINGTON, D. C., FEBY. 15, 1898.

WASHINGTON ACADEMY OF SCIENCES.—One of the most important steps toward the promotion of science and the strengthening of the agencies of investigation through unity of organization has been taken in the formation of an Academy of Sciences. There is probably no city in the country in which there is such a large group of investigators as in Washington, owing to the development there of the many bureaux and offices of the Government having to do with lines of original research. The condition of the scientific societies, owing to various causes, has been somewhat anomalous, there being a considerable number of independent organizations, each with its own administrative officers and publications, having little to do with neighboring societies. The lack of unity has been a matter of regret, as it is obvious that due recognition has not been given to the value of the work in the scientific societies from the fact that the results have been greatly diffused through many minor channels.

The origin of this peculiar condition of disintegration has been attributed to the traditions of the first of the organizations, the Philosophical Society. This adopted a somewhat exclusive view of scientific work, being extremely careful in the character of its membership and not attempting to popularize or attract others to its meetings. From time to time it neglected opportunities of forming sections within which topics of special interest might be discussed, and it may be said forced the more active and energetic of its members to seek other channels for reaching the public. As a consequence the Anthropological Society broke away from it, and in turn other organizations have been formed covering various fields of science, as shown by the names, until there now exist seven well recognized scientific associations, known as the Anthropological, Biological, Chemical, Entomological, Geological, Geographic, and Philosophical, besides others of less note. The growth of some of these societies, especially the more popular, the Anthropological and the Geographic, has been rapid, while on the other hand the Philosophical has declined in membership, and has come to be regarded as composed mainly of mathematicians and physicists.

Attempts have been made to bring about such a closer union, that economy of effort and money might be secured in administration and publication. As a result of the movement a Joint Commission was formed in February, 1888, its functions being advisory. In 1895, believing that fuller coöperation was desirable, this Commission, originally composed of three delegates from each society, was enlarged to include the officers and administrative Boards of all the component organizations. This new Board, consisting of about eighty men, was found to be cumbersome and not wholly efficient; therefore, after considerable discussion, the plan was adopted of forming an entirely new body to be known as the Washington Academy of Sciences, to take the place of the old Joint Commission of the Scientific Societies, and to perform other functions.

The method of procedure has been for the old Joint Commission through a special committee to draw up an act of incorporation and set of by-laws. When these had been agreed upon they were submitted to the component societies and ratified. The problem of choosing the original members of the new institution developed many plans, but out of these one was adopted which proved satisfactory. Each member of the Joint Commission was requested to prepare a ballot of one hundred names; out of these the seventy-five having the highest number of votes were chosen to form the nucleus of the Academy.

The objects of the Academy are: the promotion of science with power to acquire real estate, to hold meetings, publish documents, conduct lectures, assist investigation, maintain a library, and in general transact any business pertinent to an academy of science. The particular function of the Academy has not yet been determined upon, but it is probable that at first its energies will be bent toward the publication of results of original research, or possibly the reprinting of papers of peculiarly meritorious character, or the conducting of the series of Saturday afternoon lectures.

On Wednesday, February 16, the Washington Academy of Sciences was formally organized and the following officers elected: President, J. R. Eastman; Secretary, G. K. Gilbert; Treasurer, Bernard R. Green; Managers, Frank Baker, A. Graham Bell, F. W. Clarke, C. Hart Merriam, H. S. Pritchett, George M. Sternberg, Charles D. Walcott, Lester F. Ward, and Carroll D. Wright.

River Pollution.—The increasing pollution of the waters of the Potomac River is a matter of deep concern to the inhabitants of the city of Washington owing to its marked effect upon the health not only of the citizens but also of visitors to the national capital.

The problems here are similar to those encountered to a greater or less degree in many other cities, according to the geographic environments. In the case of the city of Washington water is obtained directly from Potomac River at a point just above the Great Falls, where the river plunges over a succession of cataracts and finally descends to the tidal estuary extending above Georgetown, or West Washington as it is now called.

The Potomac receives its waters from rainfall upon the Allegheny Mountains, the drainage basin being within portions of the States of Pennsylvania, Maryland, West Virginia and Virginia. The greater part of the tributaries flow in a northeasterly direction through limestone valleys between high, sharp ridges of the harder sandstone. The waters coming from the hills or mountains of sandstone or of crystalline rocks are as a rule clear and pure, excellent for domestic purposes, but when the smaller streams enter the fertile valleys, whose soil is largely the residue left after partial solution of the calcareous, they become discolored and in times of storm the streams carry heavy burdens of mud. Thus the water in Potomac River is often of a yellowish tinge and almost opaque, owing to the load of exceedingly fine clay held in suspension.

In addition to the natural impurities due to washing of the agricultural soils there are, however, more serious causes of apprehension in the artificial pollutions, whose quantity is growing larger each year. In the more northerly parts of the basin, especially in western Maryland, are many coal mines, the water from which is drained or pumped into creeks tributary to the Potomac. This water as a rule contains, besides iron, a considerable quantity of sulphuric acid in various combinations, sufficient in quantity to poison the fish and to be a source of annoyance, if not of injury, to the inhabitants of smaller towns. Many tanneries and pulp mills manufacturing paper discharge their refuse into the flowing waters and sawmills throw the dust out where it may be washed away. It is probable that the acids from the mines neutralize some of the alkalies discharged by the pulp mills, and that mingled in the water new and harmless compounds are formed, many of the deleterious substances being destroyed during the time that the stream is freely exposed to light and air.

With the increase of agriculture in the fertile valleys of the Shenandoah River and the development of manufacturing industries all along the stream, the towns increase in size and new villages spring up. Each of these in time introduces systems of water supply with accompanying sewage, the ordinary form of disposal being to discharge this into the nearest running water. Passing downstream this is greatly diluted and, in case of refuse from manufacturing establishments, it is often difficult to detect the presence of impurities at points ten miles or more below the place of discharge. Chemical and bacteriological analyses often yield negative results owing to the degree of dilution, but from the fact that pathogenic germs are not often found in water samples it is hardly safe to assume that they may not be present and active. It is well known that these are continually entering the waters of the Potomac River at various points with the sewage and waste materials, and it is hardly probable that in a journey of from one to four days' duration their virulence is entirely destroyed.

The quantity of water carried by the Potomac River above Great Falls in flood ranges from 50,000 cubic feet per second up to 200,000 cubic feet per second, or even more. These floods, of irregular occurrence throughout the first half of the year, are of short duration, the water usually subsiding in a few days to a volume of from 3,000 to 5,000 cubic feet per second. In the months from August to November inclusive the discharge may sink to, or below, a thousand cubic feet per second. At such times there is the greatest need of water, and at the intake of the Washington Aqueduct the quantity may be from 6 to 9 per cent. of that in the entire stream.

During the periods of protracted drought the water is clear, since it comes mainly from springs in the limestone regions and is not discolored by mud washed from the fertile fields. To the eye the clear water of summer is preferable to the turbid material borne by spring freshets, but the proportion of invisible organic matter, especially of pathogenic germs, may be relatively great.

The case of Washington may be cited to illustrate the necessity of action being taken by Congress in the matter of protecting the waters of interstate streams. In some portions of the country State lines have been drawn so that drainage basins lie within a single commonwealth, and it is possible for the legislature to enact measures preventing the pollution of rivers from which water is taken for municipal or domestic purposes, but as a rule topographic boundaries have been ignored and State lines have been laid down upon the map, cutting the catchment areas so that streams cross and recross State boundaries. Thus, as in the case of the city of Washington, the source of water-supply may lie in several States. There is here an object lesson before the eyes of our national legislature enforcing the contention that Congress must for the general welfare of the people provide broad legislation, permitting the protection of the streams which pass from one State into another.

Progress on the New York State Map.—The great map of the State of New York, as planned, will consist of about 250 atlas sheets. Of these, 75 have been engraved and published, and 14 additional are in various stages of progress of drawing and engraving. During the field season of 1897 there have been 10 new sheets surveyed and 4 old sheets revised. These latter were those showing the city of New York. These were prepared about ten years ago and since that time notable changes have taken place in the suburban towns, such as to necessitate a complete revision. The result of this re-survey will be shown in a map of Greater New York—one of the most detailed and important maps yet issued through the coöperation of the State with the National Government.

The list of publications of the Geological Survey gives the names of the sheets now available. In addition to these, the field work on the following has been completed: In the Adirondack region—Newcomb, Thirteenth Lake, Indian Lake, Old Forge and Remsen; in the centre of the State—Utica, Cazenovia, Tully, Skaneateles, Auburn and Moravia; in the southwestern part of the State—Olean and Salamanca; and along Lake Ontario—Hamlin and Brockport. In the completion of the map of Greater New York the Oyster Bay and Hempstead sheets have also been finished. The total expenditure from all sources last year is stated to have been $32,228.

Boundary Line between Idaho and Montana.—In the Sundry Civil Bill, approved June 4, 1897, an appropriation was made for surveying the boundary line between Idaho and Montana, beginning at the intersection of the 39th meridian west from Washington (or 116° 3′ 0″ 60 west from Greenwich), with the boundary line between the United States and the British possessions, then following this 39th meridian south until it reaches the summit of the Bitter Root Mountains, this line being in all about 70 miles in length. It lies within some of the wildest and least known portions of the United States and crosses a number of large rivers. In locating the position of the 39th meridian a base was taken in the vicinity of the city of Spokane, Washington; from known points here triangulation was continued westward to the summits of the Bitter Root Mountains, and thence in a belt having a general northerly and southerly position, certain points being determined near the designated meridian.

The field season proved to be less propitious than usual, and great trouble was experienced from the smoke from burning forests. A sufficient number of points, however, were determined so that it will be practicable during the season of 1898 to locate positions for the monuments marking the meridian. Temporary marks are to be established on preliminary or random lines and when the true line has been determined monuments will be erected. The more important of these, particularly near the Northern Pacific Railway, the Great Northern Railway, and the Kootenai River, are to be monoliths 6 feet in length, at least 10 inches square, set 3 feet in the ground and with the words "Idaho" and "Montana" cut on the west and east sides respectively. Similar monuments are to be placed, if possible, at the international boundary and at the summit of the Bitter Root Mountains, while intermediate positions will be shown by wrought-iron posts 6 feet in length and with a brass cap upon which is inscribed a north and south line with the words "Idaho" and "Montana" on the respective sides. Beneath each of these posts are to be buried charcoal or vials filled with ashes. Where the point to be marked falls upon a rock surface holes are to be cut and copper bolts inserted.

Distances along the line are to be measured by chaining, or by stadia, where the slopes are so precipitous that they cannot be crossed. The photographs taken along the course of this boundary exhibit a country of extraordinary roughness and complication of structure. Range after range of tangled mountain masses appear with narrow crests and precipitous sides separated by narrow gash-like valleys. Near the south end of the line is Clarks Fork River flowing to the west into Lake Pend d'Oreille, and to the north of this the Kootenai River which, flowing in a northwesterly direction from Montana, crosses a corner of Idaho and passes north into British territory to form with Clarks Fork the Columbia River.

SURVEY OF THE NATIONAL FOREST RESERVES.—The forest reserves of the United States are, with the exception of the Black Hills, situated in high mountainous regions, with altitudes ranging from 5,000 to 13,000 feet. They are at a considerable distance from ordinary means of transportation, and the roads or trails leading to or through them are traversed with considerable difficulty. Storms are frequent and during the summer months when snow does not fall the smoke from forest fires often obscures the vision. The surveys of these areas have, therefore, been prosecuted with great difficulty and with more or less actual privation on the part of the men engaged in the work. In some cases it has been necessary for the surveyors to pack upon their backs their blankets, instruments and supplies, it being impossible to take horses or mules over the route traversed.

The survey of the reserves has been divided into two classes of work, the first being the location of points of control and mapping of the surface of the country in order to prepare maps similar to the ordinary topographic sheets. The second class of work has been the examination of the character of the forests by men specially qualified, and selected for their known ability without regard to political affiliations. These special field assistants obtained information concerning the amount, species, size and distribution of the timber, representing these facts diagrammatically upon the maps. These also show the extent of timber cutting, the damage done by fire, and the location of farming lands. The reports accompanying these maps describe the character of the undergrowth, the soil, the extent and possible value of the mineral lands, the demand for timber and the facilities for taking this out. A discussion is also had of the effect upon the forests of the pasturage of cattle and sheep, particularly of the latter.

The principal areas surveyed during 1897 have been the Black Hills Reserve in South Dakota, the Big Horn and Teton Reserves in Wyoming, the Lewis and Clark and Flathead Reserves in Montana, the Uinta Reserve in Utah, the Bitter Root Reserve, lying partly in Montana and Idaho, the Priest River Reserve in the extreme northern portion of Idaho, and the Washington Reserve in the northern part of the State of Washington. The largest force of men was centred in the Black Hills, there being on December 1 an aggregate of 57 surveyors and assistants in that region. The triangulation of the whole area was completed and about two-thirds has been mapped. During the progress of the work surveys were extended along 1,190 miles of road and 451 miles of spirit level lines were run. The land survey work cost less than $10 per lineal mile, including the expense of instruments and outfits. The entire forest area within the reservation and also portions outside have been examined and the data placed upon the topographic maps.

In contrast to the work in the comparatively well settled Black Hills region has been that carried on in the reservations in northern Idaho and Montana. Here there are few roads or trails and little if any mapping has been done. It was necessary to lay out a scheme of triangulation from the nearest astronomic station, that at Helena, Mont. The points thus obtained furnish a control from which mapping will be carried on during the season of 1898. Without these maps it has been found impracticable to examine the public forests. The country is an almost unknown region, apparently consisting of complicated ranges of mountains with serrate peaks and separated by narrow, rocky valleys.

In order to make a beginning in the survey of the Bitter Root Forest Reserve it has been necessary to select an astronomic station. The location chosen was in the town of Hamilton, Mont. The latitude was obtained by observations on sixty pairs of stars, and the longitude by time observations and telegraphic exchange of clock signals with Washington University at St. Louis, Mo., on five nights. A permanent meridian mark has been set one-half mile south of the astronomic pier. A base line of 57 miles has also been measured with a 300-foot tape. From this, triangulation was expanded over an area of 6,500 square mlles, furnishing points of control sufficient for a reconnaissance map. A detailed survey has been made of 600 square miles and the remainder of the reserve has been shown by a reconnaissance sketch, sufficient for the purpose of exhibiting the extent of the forest areas and of the portions burned over as well as those naturally bare of timber. The mineral areas and farming lands have also been defined upon this map.

The Washington Forest Reserve in the northern part of the State of that name embraces some of the most attractive mountain areas of the country, both from the ruggedness of the topography and the picturesqueness of the flora. The high snow-clad summits of the Cascade Range send down numerous glaciers which penetrate the dense forests, cutting broad, white lines through the evergreen trees and giving rise to scores of cascades often bounding over cliffs hundreds of feet in height. In the narrow valleys are many lakes, some of them of extreme depth. The best known of these is Lake Chelan, nearly 70 miles in length and from one to four miles in width. The deepest point in this lake is about 200 feet below sea-level, the depth being approximately 1,300 feet. About 400 square miles has been mapped in the vicinity of this lake, a base line for this purpose having been measured near the shore. Level lines were continued from the Columbia River and permanent bench marks established at the head and foot of the lake, the water surface being found to be 1,108 feet above tide. Levels were also continued to the summit at Cascade Pass, the altitude being 5,423 feet.

Observations were made within this reserve by which the extent and variety of the timber areas have been defined and the lands more valuable for agriculture than for timber have been outlined. On the western side of the Cascade Mountains field work on the survey of the reservation was greatly retarded by alternations of storms and smoke from forest fires. Topographic surveys were extended over about 500 square miles and level lines over the roads and trails. A connection was also made by triangulation with the Ellensburg base on the east side of the mountains.

While various surveys and examinations of many of the public forests have been pushed in the field, attempts have been made by Mr. Henry Gannett to bring together all of the uncollected or unpublished data concerning the lumber resources. Timber cruises have been made by railroads and land companies in areas scattered all through the forested region, giving facts which, when brought together, will for the first time enable the preparation of estimates of the amount, character, and distribution of merchantable timber of the West, and give to the people of the United States a true conception of their property holdings in timber lands. N.